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SCIENCE NEWSLETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE•



Tin Can Photograph

See Page 148

March 7, 1942

A SCIENCE SERVICE PUBLICATION

Do You Know?

Boulder dam is the highest in the world—726 feet.

Sweden's grain crop for 1941 is the smallest since 1917.

Lightning voltage is estimated as high as 10,000,000 to 15,000,000 volts.

The North American *elf owl* is the tiniest on the continent—it is no larger than a sparrow.

Tobacco of the Burley and Virginia types is now produced in Austria under German direction.

A new species of *spiderlily*, discovered in Guatemala, now is growing in Chicago's Garfield Park.

The *catfish* of the African swamps swims upside down on occasion—the only fish known to do so.

Germany is using over two million war prisoners and foreign civilians in her agriculture and industry.

For crossword puzzle fans—the moa is a giant flightless bird of New Zealand similar to the rhea and the emu.

Shortage of tin and shipping space has turned chemists toward research on more concentrated foodstuffs, particularly, dehydrated vegetables.

Some molecules wriggle like worms when an alternating electric field is applied, Dr. Raymond M. Fuoss of General Electric Research Laboratory has learned.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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PHYSIOLOGY

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ZOOLOGY

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A woodpecker's tongue is longer than his head.

The homing instinct of pigeons is still a mystery.

An electric eel can discharge a shock of about 450 volts, enough to kill a man.

Atoms of pure iron at ordinary temperature are arranged in a crystal structure.

Because Borneo jungles are so thick, rivers are used for communication; rainfall is extremely heavy.

Some species of mice can jump 10 feet at a bound.

Radium evolves enough heat in an hour to melt its own weight in ice.

Pulling power of modern steam locomotives is 70% greater than in 1913.

Farsightedness is the most common visual defect among American school children.

Five pounds of whole wheat bread contain a quarter of a teaspoonful of calcium.

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PHYSIOLOGY

Experiments Hint Existence Of Paternity Chemical

Ability To Become Fathers Lost By Human Volunteers Living on Arginine-Lacking Diet; Is an Amino Acid

EXISTENCE of a paternity chemical, without which fatherhood is impossible, is hinted by researches now under way at the Johns Hopkins Hospital and Medical School.

Arginine, a basic constituent of certain foods, is the substance suspected of being the paternity chemical. This chemical is one of the ten essential amino acids, which are the building blocks of protein found in meat, fish, poultry, eggs, cheese, milk and some vegetables.

Its possible role as a paternity chemical was revealed in studies with human volunteers. When these young men lived on a diet otherwise adequate but lacking arginine, the number of male reproductive cells, the spermatozoa, were greatly reduced and those that were produced showed scarcely any motion, indicating that the men on the arginine-lacking diet had lost the ability to become fathers. When arginine was restored to their diet, spermatozoa production returned to normal.

Arginine was discovered in 1895 and it has long been known that spermatozoa are four-fifths (80%) arginine. The present studies are the first, however, in which human need for this chemical and the symptoms of its lack have been shown. Hitherto human need for this and the other essential amino acids has been assumed from the fact that rats require them. Knowledge of the rat's need for amino acids came from research initiated by the late Professors Thomas B. Osborne and Lafayette B. Mendel, of Yale University, and recently completed by Prof. W. C. Rose, of the University of Illinois.

The studies on the role of the amino acids in humans are being made at Johns Hopkins by Dr. Anthony A. Albanese, Dr. Joseph E. Brumback, Jr., Dr. Marjorie Hayes, Dr. L. Emmett Holt, Jr., Dr. Charlotte Kadji, Dr. Landrum B. Shettles and Dr. Dorothy M. Wangerin.

Two other amino acids, tryptophane and lysine, are also required by humans, the Johns Hopkins scientists found.

Lysine may be a maternity chemical. The studies show that in women as well as in female rats the female reproductive cycle is upset by lack of lysine.

The experimental diets were made up of Crisco and other fats, sugar, starchy foods, and fruits and vegetables selected for their low protein content, such as tomatoes, mushrooms, carrots, asparagus, apples and oranges. Satisfactory meals, including such items as banana flour muffins (wheat flour which contains protein could not be used) were devised by Miss Anne Lyddane, dietitian of the Johns Hopkins Hospital.

In order to eliminate all the amino acids except the one being studied, a mixture of the other acids was given. This proved very unpalatable, so it was given in a vegetable juice cocktail which the men gulped down like a dose of bitter medicine.

During the diet experiments, the human volunteers kept a good appetite, slept well and lived essentially normal,

active lives. During hot weather they were allowed two beers a day or its equivalent in other alcoholic beverages. They found, however, that their tolerance for alcohol was lessened, and that one beer or none at all was all they could take.

Details of the studies thus far have been reported to the American Academy of Pediatrics and the Society for Experimental Biology and Medicine.

Science News Letter, March 7, 1942

ZOOLOGY

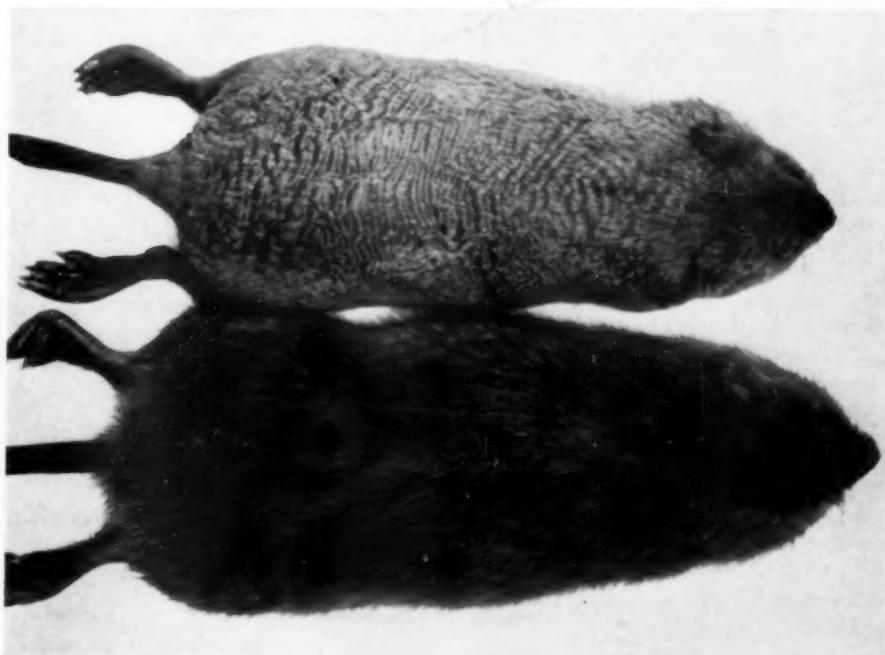
Find Muskrats With Fur In "Permanent Waves"

TWO muskrats with their fur in "permanent waves," trapped on the Blackwater National Wildlife Refuge near Cambridge, Md., are the novelty reported by Dr. Herbert L. Dozier of the U. S. Fur Animal Field Station (*Journal of Mammalogy*, February).

The animals, a male and a female, lacked the long, coarse guard hairs that have to be plucked in preparing the higher-priced grade of muskrat pelts. The soft fur was rippled or wavy, with a beautiful silky sheen.

"That of the female," Dr. Dozier states, "was distinctly more waved and in a manner quite similar to the permanent wave that is usually obtained only in a beauty shop."

Trappers and fur buyers were very



NATURAL "PERMANENT" (ABOVE)

much interested, as nothing closely resembling the character has ever been reported out of the millions of muskrats that have been trapped for fur.

Unfortunately, the two animals were

killed in the trapping, so that breeding experiments are not possible. If living duplicates can be secured and the new type of fur fixed by breeding, it might prove valuable in the fur trade.

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GEOPHYSICS

Hoover's Son Invents Way To Locate Oil Deposits

Invention Uses Artificial Earthquake Method of Prospecting; Seismic Wave Produced by Explosion

HERBERT HOOVER, JR., son of the former President, has been awarded U. S. Patent 2,272,201 for an invention that will make for the more accurate location of oil or other mineral deposits buried deep in the earth. Mr. Hoover has assigned his patent rights to Consolidated Engineering Corporation of Pasadena, California, of which he is president.

The invention applies to the seismic or artificial earthquake method of prospecting. The earthquake wave is produced by an explosion of dynamite. The seismic waves travel downward and are reflected back to the surface from harder or softer layers at different depths. Receptors placed at different points along the ground pick up the waves and record them on a moving strip of photographic paper. From the times of arrival of the different "reflections," the depths of the various reflecting beds can be calculated.

The invention consists of an electrical network which Mr. Hoover calls a "dispersion compensator." It corrects for the fact that seismic waves of different frequencies travel at different velocities through the earth—an effect called dispersion.

The original impulse produced by the explosion consists of a mixture of many frequencies. These become strung out into a "spectrum" as the pulse travels through the earth. Thus, if the high frequencies outrun the low frequencies and arrive first at the receptors, followed by the others in succession, the result on the photographic record is a long-drawn-out, indefinite wave that may not be distinguishable from the general commotion that is always present. In short, it is a blur.

The compensator, which is inserted between the receptors and the recorders,

retards the waves in proportion to their frequencies. Thus, the high-frequency waves which arrive first are retarded the most, the others less and less. The stretched-out wave is pushed up together again. The result on the record is a sharp definite wave, easily distinguished from the general commotion, a wave whose time of arrival can be accurately measured (to a thousandth of a second or better) and the depth of the reflecting bed from which it came, accurately calculated.

This is important now that all the easy prospecting for oil has been done. The days when an error of a hundred feet or so didn't matter are gone. Today a difference of ten feet may be significant.

Due to dispersion, Mr. Hoover states in his patent, low frequency waves from one reflecting bed may arrive at the receptors at the same time that high frequency waves arrive from another reflecting bed separated from the first. Without the compensator they are hopelessly mixed and indistinguishable.

Mr. Hoover's method of correcting seismic dispersion is exactly analogous to the correction of an optical lens for chromatic aberration. In this case, a second lens is added, the dispersion of which is opposed to and equal to that of the first lens, and therefore corrects it.

Since the dispersion of a seismic impulse will be the greater the longer its path in the earth, Mr. Hoover provides a control box which by the corrective effect of the compensator may be regulated to suit the conditions.

Science News Letter, March 7, 1942

Army quartermasters required glassmakers and designers to figure out a special kind of jar for preserves—soldiers had to be able to clean it out with a spoon!



SIMPLE CAMERA

These few common objects enable the metallurgist to look into steel and see what's wrong with it.

METALLURGY

Coffee Can Camera Aids Improvement of Steel

See Front Cover

A TIN CAN, two small brass disks and a screw clamp compose a camera that sees into steel with the aid of radioactive atoms, and may point the way to better steel making.

The camera was devised by Dr. William E. Shoupp of the Westinghouse Research Laboratories to find out whether phosphorus added to molten steel is well distributed or bunched together in spots. To disclose its location, the phosphorus was made artificially radioactive by bombardment in an atom smasher before it was added to the molten steel. A small disk was then molded of this steel.

In a darkroom a piece of photographic film was laid on each side of the steel disk, two small brass plates were placed outside the film and the whole stack was clamped together and put in the tin can to keep out the light. After being left overnight, the film was developed.

The result of one such test is shown on the front cover of this week's SCIENCE NEWS LETTER. The light and dark blotches are caused by rays from the tracer phosphorus atoms. The light areas correspond to little air pockets or blowholes in the steel and show that the phos-

phorus had concentrated on the surfaces of these pockets. This simple camera thus furnished the information sought.

The same method, Dr. Shoupp said, can be used to reveal the location of other substances, as for example, sulfur, carbon, manganese and silicon, for any of these substances can be made into tracers with an atom-smasher.

Science News Letter, March 7, 1942

MEDICINE

Add to Explanations of Sulfanilamide Action

NEW research confirming earlier evidence that sulfanilamide attacks bacteria by literally starving the germs may provide a hopeful method of "making drugs to order" for specified germs.

Until recently, pharmacologists, the scientists who develop new drugs, have worked mainly on a hit-or-miss basis. Ehrlich, for example, tried 606 times before he hit on salvarsan, the specific drug for the organism of syphilis.

The new research is reported (*Lancet*, Jan. 10) by Dr. Sydney D. Rubbo and Dr. J. M. Gillespie of the University of Melbourne, Australia. They found that a chemical called p-aminobenzoic acid is needed by a certain type of bacteria for growth. This acid is similar in its chemical structure to sulfanilamide. When the sulfanilamide is present, the bacteria are tricked into using it instead of the necessary acid. Since sulfanilamide does not promote growth, despite the similarity in chemical structure to the acid, the bacteria cannot develop.

However, only one part by weight of the acid will offset the growth inhibitory qualities of 26,000 parts of the sulfanilamide, the report states. This is a possible explanation of why such large amounts of the drug are needed in treatment of bacterial infections.

Dr. D. D. Woods and Dr. P. Fildes, British scientists, had earlier discovered evidence that the acid was necessary for bacterial growth, and that sulfanilamide inhibited growth by interfering with the bacterial use of the acid. The present research confirms their evidence, while an editorial in the same issue of the *Lancet* comments that "one new and more rational method has been added to those already available in (drug) research."

This new method is the search for compounds similar to substances known to be essential to the growth of bacteria.

Science News Letter, March 7, 1942

ASTRONOMY

Study of Distant Galaxies Gives Hints on Milky Way

Exploring Outward in Time and Space, We Should Be Able To Work Out Destiny of Our Own Galaxy

EXPLORING outwards in the time and space of the universe, Dr. Harlow Shapley, director of Harvard Observatory, in an address before the Inter-American Astrophysical Conference, declared that by studying hundreds of thousands of great systems of stars, each comparable to our own Milky Way, it should be possible to work out whence our own system of stars came and where it is going.

Already Dr. Shapley has directed a census of these galaxies out to a distance of 100,000 light years (600,000,000,000 miles). More than 400,000 new systems have been discovered. About a thousand million million stars are involved in this gigantic study of the whole sky, now two-thirds complete.

Mexico's new Schmidt-type telescope, just dedicated at Tonanzintla, largest of its kind reaching southern regions of the sky, is specially well suited to the study of these faint external galaxies.

Three-quarters of these great aggregations of stars have spiral arms which hitherto have been thought of as streams of stars thrown off from the central portion of the galaxy. Dr. Shapley told the conference that these arms actually appear to be condensations within the systems rather than ejections from the center masses.

Measuring photographic plates with electrical measuring instruments more sensitive than the human eye, Harvard measurements reported by Dr. Shapley show that only a fifth of the light of a spiral galaxy is in its arms and most of it is in the little-noticed background of the galaxy.

Recent Harvard studies show that our own galaxy, the nearest stars of which we see in the night sky, is larger than supposed. Variable stars, used by astronomers as yardsticks, have been found as distant as 30,000 light years on the other side of the center of the galaxy.

Evidence that the Small and Large Magellanic Clouds may be physically connected was presented by Dr. Shapley. An extension or wing of the Small Magellanic Cloud was discovered and has been

shown to be attached to it. This wing extends outward to the Large Cloud.

Out of such studies, Dr. Shapley predicted, will come more information on deeper problems, such as the age of the universe, and whether it is finite in size and material, or limitless in one or both of these quantities.

Science News Letter, March 7, 1942

Meteorites Age of Earth

EVERYTHING on earth, even the meteoritic importations from outer space, are the same age, about two to two and a half billion years, Dr. Robley D. Evans of the Massachusetts Institute of Technology told the conference.

This suggests that the "pebbles from heaven" as well as the earthly elements themselves were formed at the same time.

Dr. Evans used a new method of determining age. He estimated ages from the relative activities of long-lived radioactive isotopes or varieties of some elements. In terrestrial samples the radioactive isotopes of uranium, potassium, carbon, oxygen and others always occur in the same proportions, suggesting that they were all formed at the same time. Measurements of meteorites show the same relative abundance of the isotopes.

This checks well with earlier age determinations upon iron meteorites and earthly rocks by measuring the amounts of helium produced as by-products of radioactive disintegration.

Science News Letter, March 7, 1942

RADIO

Saturday, March 14, 1:30 p.m., EWT

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Kirstley F. Mather, of Harvard University, will predict the organization of all human beings after the war and a planned coordination of all sorts of human activities.

Tuesday, March 10, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.

DENTISTRY

Contagion Theory of Trench Mouth Challenged

Bacteriologist Suggests That Vincent's Disease May Be Associated With Dietary Deficiency

THEORIES that Vincent's disease, or "trench mouth" is contagious were questioned by Dr. Theodor Rosebury, bacteriologist of the Columbia University College of Physicians and Surgeons, speaking before the Chicago Dental Society. Dr. Rosebury called for immediate investigation at the first outbreak in any army camp of the ailment which was widespread among Allied soldiers of the last world war. He said:

"It has not been demonstrated that Vincent's infection is a communicable disease. The evidence of man-to-man transmission which has been reviewed is entirely circumstantial."

(Medical scientists at the National Institute of Health recently reported they were unable to prove that Vincent's infection was communicable among monkeys.)

Dr. Rosebury suggested that "trench mouth" is associated with dietary deficiency which lowers the resistance of mouth tissues to infection.

Dr. Rosebury added: "It is nevertheless clear that infection plays an important part in the disease, and the facts also fail to demonstrate the alternative—that Vincent's infection is not communicable. Since the disease has been prevalent among soldiers, and is likely to become so again, it is important that the question be answered in order to justify the use or lack of use of isolation and other sanitary precautions in handling outbreaks. A plan for an experiment to elicit the needed information, to be done at an army camp on the occasion of an outbreak of Vincent's infection, is therefore suggested."

Science News Letter, March 7, 1942

Sulfanilamide An Aid

EXTRACTION of teeth of patients with valvular heart disease can be accomplished with the aid of sulfanilamide without the risk of causing an often fatal heart ailment, subacute bacterial endocarditis. Dr. Joseph A. Hopkins, of St. Anthony's Hospital, Rockford, Ill., reported these findings to the meeting

after study of the use of sulfanilamide in dental surgery.

Dr. Hopkins explained that the germ which causes this type of endocarditis—streptococcus viridans—is present in the throats and mouths of even healthy persons. The germ does not enter the blood stream, however, unless there is a break in the mucous membrane such as would be caused by pulling a tooth. Once in the blood stream the germ may attack the weak spots of the heart.

By giving patients sulfanilamide, this danger is eliminated since the germ is killed before it can cause trouble, he concluded.

Science News Letter, March 7, 1942

AERONAUTICS

Training of Airplane Pilots Should Start in Grade Schools

TRAINING of airplane pilots should start in the grade schools with instruction in the fundamentals of aeronautics and model-making, Dr. M. N. Walsh, neurologist and psychiatrist at the Mayo Clinic, declares in a report on pilot selection.

He urges that "boys at least 15 years old and more be given the advantage of that most important of all training: early familiarity with the air by means of actual flying.

"This is their right. By this means a natural selection of those best fitted to be airmen will occur."

In spite of much work on the problem of pilot selection, there are, in Dr. Walsh's opinion, no objective tests which will show whether or not a man will become a good flyer, and he doubts that there ever will be. But, as the Germans and Russians have discovered, programs that start training children in the principles of flying at such an early age that they "grow into flying" perform



WELCOME EMBLEM

This design by Walt Disney, intended for voluntary use by packers of foods, is expected to become a familiar sight wherever American food products are sent throughout the world. The American eagle is poised protectively over a cargo boat chasing off a bombing plane. The stars above represent the four freedoms, it is explained by the U. S. Department of Agriculture.

very efficiently the task of "natural selection of pilots."

Those not suitable as pilots because of either physical or temperamental disability are automatically weeded out before they reach military age.

The present war will probably be long, Dr. Walsh points out, so he urges immediate steps to set up the mechanism by which "American boys can be given the advantages of the type of training which is carried out in Germany, Russia and Japan" and which is being started in Great Britain and Canada. Foundations for a state program of this type are being laid in Minnesota with the active cooperation of Governor Harold Stassen.

Extension of such a program throughout the nation will enable American airmen "better to cope with their adversaries" and, says Dr. Walsh, will insure that in "the future time of peace the United States may take its rightful place as leader of the world in the air."

Science News Letter, March 7, 1942

CHEMISTRY

New Vitamin In B Group Suspected By Health Service

Chemical Preventing Functioning of Bacteria in Intestines Seems Also To Hinder Synthesis of Vitamin

YAS SMOOTH a bit of sleuthing as ever issued from Sherlock Holmes' Baker Street headquarters, research scientists of the U. S. Public Health Service are pointing toward what appears to be a new, and hitherto unsuspected vitamin in the all-important B group, of which six vitamins necessary for rats are known to exist.

First hint of the existence of a seventh B vitamin, needed by rats, came from other researchers. These scientists found that rats fed on a diet containing other necessary vitamins plus the six known B vitamins and a sprinkling of the drug, sulfaguanidine, failed to grow normally. The sulfaguanidine in this case simply prevented the functioning of bacteria normally present in the intestines. These bacteria, the researchers suspect, synthesize the seventh B vitamin. That was stopped by the sulfaguanidine and so the rats failed to grow. Since the other vitamins necessary for growth were provided by the diet, and the six B vitamins were supplied too, it appeared that the growth failure was due to a missing No. 7 B vitamin.

Now comes an additional clue from the laboratories of the Public Health Service at the National Institute of Health, Bethesda, Md. Dr. Floyd S.

Daft, Dr. L. L. Ashburn, Dr. Samuel S. Spicer and Dr. W. H. Sebrell have discovered that seven young rats fed on a similar diet plus sulfaguanidine developed hyaline sclerosis.

Hyaline sclerosis, or hardening of the arteries, is an all too common disease of humans. Its causes are far from clear. The walls of the blood vessels are often completely replaced by a glassy material, and normal functions seriously impaired.

When the Public Health Service men discovered the sclerosis they instantly suspected that once again the sulfaguanidine had stopped the normal intestinal production of the needed No. 7 B vitamin. Again the other necessary vitamins had been provided, plus the six B vitamins—thiamin, riboflavin, pyridoxine, pantothenic acid, nicotinic acid, and choline. It appeared that the damage was done by the absence of No. 7 vitamin.

Whether the sclerosis is due to a shortage of the seventh B vitamin necessary for rats or to some poisonous action of the sulfaguanidine is not yet clear. The Public Health Service men hope the drug will be ruled innocent by further research. If so, a new member may be added to the vitamin B family.

Science News Letter, March 7, 1942

PHYSICS

Boiling Hot Ice Is Produced By Extremely High Pressures

HOW boiling hot ice and other weird things occur at extremely high pressures was told by Dr. P. W. Bridgeman, Hollis professor of mathematics and natural philosophy at Harvard University. He spoke at Iowa State College under the auspices of the Sigma Xi, national fraternity for the promotion of scientific research, and will give the Sigma Xi lecture at a number of other colleges and universities during the next few weeks.

Dr. Bridgeman also described the steps by which pressures in his laboratory have been successively raised from a previous high of 3,000 atmospheres or 45,000 pounds per square inch, the maximum employed in artillery, to the present record of 400,000 atmospheres. This is 6,000,000 pounds per square inch, the pressure that would be found under a tower of bricks nearly 1,500 miles high, or at a point in the interior of the earth over 1,000 miles below the surface.

Even at this extreme pressure, graphite refused to change to diamond, and Dr. Bridgeman believes that this feat, which Nature herself accomplishes so sparingly, cannot be done at ordinary temperatures, no matter how high the pressure.

More than boiling hot ice was produced at a much lower pressure. At 40,000 atmospheres, ice was produced at a temperature of approximately 375 degrees Fahrenheit. This is 163 degrees above the usual boiling point of water, nearly as far above it as the boiling point is above the freezing point.

Hot ice is indeed not ordinary ice, but it differs from the latter practically only in that its volume is less; it sinks in water, and its melting point is raised with increasing pressure, contrary to the behavior of ordinary ice. This explains why it does not melt at high temperatures if the pressure is sufficiently raised.

Six of these other kinds of ice emerge at different pressures. Nearly all substances behave in the same way. Eleven kinds of solid camphor, six kinds of bismuth, appear as these substances are compressed.

Physical properties change remarkably. Poor conductors of electricity become fair conductors, and good conductors become sometimes better, sometimes worse.

Science News Letter, March 7, 1942

MATHEMATICS

Einstein's Predictions Derived by Mathematician

FROM Einstein's special relativity theory, Dr. George D. Birkhoff of Harvard has derived the famous values for the change in the planet Mercury's perihelion and the curvature of light passing by the sun. These predictions were first made by Einstein on the basis of his general relativity, which followed his special relativity theory by some years. Their experimental confirmation enthroned relativity as a dominant law of the universe.

Dr. Birkhoff announced his success to the Inter-American Astrophysical Conference held under the auspices of the Mexican government. He urged scientists to give consideration to Einstein's special and general theories of relativity in relation to quantum mechanics.

Dr. Birkhoff also recalled that in 1926 he had demonstrated that Schroedinger's quantum mechanics could be derived from general relativity, which was another bringing together of fundamental conceptions in theoretical physics.

Science News Letter, March 7, 1942

MEDICINE

Common Rat Flea in Hawaii Can Spread Typhus Fever

ADDED to the recent troubles of Hawaii is the discovery by one of its scientists, Joseph E. Alicata, that a common rat flea of the islands is capable of spreading the germs of endemic typhus fever.

This is not the European typhus fever dreaded as a war plague, but the much milder variety found in non-epidemic form in the United States.

Reporting his discovery to the Washington, D. C., Academy of Sciences, Mr. Alicata explains that he let sticktight fleas feed on laboratory animals infected with typhus fever germs, to see whether or not this kind of flea, like some of its relatives, could pick up the typhus fever germs and pass them to other animals.

The finding that it can do so is of considerable interest, he points out, because sticktight fleas are commonly found on rats, dogs, cats, mongooses and chickens in the islands. According to one survey, sticktight fleas were found on 13% of rats trapped in Honolulu and made up about half the fleas collected on rats of the island of Oahu.

Fifty-nine cases of typhus fever were reported in Hawaii in 1941, but health officials here do not know whether these were endemic or European typhus fever.

Science News Letter, March 7, 1942

AERONAUTICS

Aerial Mine Invented To Trap Airplanes

AN anti-aircraft projectile which the inventor terms an "aerial mine" is the subject of patent 2,274,264, issued to Erich Bickel of Baden, Switzerland. It consists of a case containing a small charge of high explosive, suspended by a long wire from a parachute. Fired into the air in numbers, in advance of an enemy plane, the wires are expected to snag on the speeding craft, which will be destroyed by the explosive charges.

The essential feature of Herr Bickel's invention lies in the mode of packing the parts. Heaviest part of the projectile is the forward section, on which the wire is reeled, with the parachute packed in the tapering nose. At the predetermined moment, a small powder charge in the base pushes this, and the explosive mine behind it, out of the case, shrapnel-fashion.

The mine, being relatively light, lags

in flight, unreeling the wire from the faster-flying, heavier forward section. When all the wire has been paid out, it straightens, jerking the parachute out of the nose, which flies on empty. The mine is now afloat in the air, ready for business.

This invention appears to be an elaboration of an idea first suggested during World War I by Prof. R. W. Wood of the Johns Hopkins University. Prof. Wood's proposal was simply for steel wires or tapes, to tangle hostile planes and pull them down, launched from anti-aircraft shell in a closely similar manner.

Science News Letter, March 7, 1942

METALLURGY

New Heatless Armor Plate Developed by Australians

FOUR metallurgists of Sydney, Australia, have developed a new armor plate which is readily welded and needs no nickel or heat treatment, according to the Australian News and Information Bureau. Scientists believe the new armor plate production method may replace present Allied methods. Other Australian war inventions include the Kirby flashless mortar and the Owen sub-machine-gun.

Science News Letter, March 7, 1942

CHRONOLOGY

Poll Shows That NAS Wants Calendar Reform

APOLL of the National Academy of Sciences, whose membership comprises the outstanding leaders in American science, indicates a three-to-one preponderance of opinion in favor of a calendar reform which would "even up" the length of the months, giving each 26 working days and having each month begin on Sunday.

Results of the poll are announced in *Science* (Feb. 20) by Prof. W. E. Castle of the University of California.

Prof. Castle states that he mailed a ballot to all members of the Academy, and received responses from 168 of them or more than half the membership. Of those answering, 76% favored the change, 10% opposed and 14% went on record as "undecided." Of those who favored the change, 58% wanted it initiated in 1945, which is the next year that begins on a Sunday; 42% voted "No," unless the war ends soon enough.

Science News Letter, March 7, 1942



RADIO

Radio "Hams" Asked to Sell Equipment for War

RADIO amateurs are being called upon by the American Radio Relay League to sell their transmitters and receivers for use by the armed forces of the United Nations. Manufacturers are unable to fill the need under present circumstances.

Only standard manufactured equipment is needed. Homemade or "composite" equipment is not required at present.

The greatest need is for transmitters, the League stated. According to their figures, only 5% of amateur transmitters were purchased from manufacturers, while two-thirds of their receivers are factory-made.

Science News Letter, March 7, 1942

CHEMISTRY

Rubber's Elixir of Youth Sought in New Patents

SEAKING means for keeping rubber from getting old is almost as much a preoccupation of present-day chemists as the quest for the elixir of youth was for their alchemical ancestors. Newest effort along this line is represented in a process just patented by Joseph R. Ingram of the Nitro, W. Va., plant of the Monsanto Chemical Company, in which a coal tar derivative, indene, plays the principal part.

Aging in rubber consists primarily in its combining with oxygen of the air. This makes it stiff, deprives it of elasticity, finally produces breakdown — even as you and I. To ward off this fatal oxidation, compounds known as anti-oxidants are added in processing the rubber. Indene, in the form of compounds with formaldehyde and related chemicals, is claimed to be superior in this respect.

Mr. Ingram has been granted two patents, nos. 2,274,367 and 2,274,368, on his process and its products. Rights have been assigned to the Monsanto firm.

Science News Letter, March 7, 1942

NE FIELDS

ENGINEERING

Paint That Glows In Dark Suggested for Blackout

PAINT that glows in the dark would be used on all walls of factories that may have to be blacked out if the suggestions of Dr. Gorton Fonda of the General Electric Research Laboratory are put into effect.

Phosphorescent materials would be painted on the walls. These store up energy when the lights are shining and give it off for a short while when illumination stops. When the blackout comes the walls would continue to give off a faint ghostly glow for a short time during which the workers' eyes would become adapted to the darkness. This would also give time for the workers to find their way to their emergency posts.

Science News Letter, March 7, 1942

WILDLIFE

Newfoundland Game Herds Likely To Be Increased

THE Newfoundland Department of Natural Resources has recently completed a survey of their Virginia-sized island with the thought of increasing the game and meat supply by introducing either American white-tail or English red deer. By some incredible accident of geography this oldest of English colonies was never populated with the same numerous big game species as were nearby Canada and the United States. Only the black bear and woodland caribou are native to Newfoundland.

Some years ago moose were brought from the mainland and released on the island paradise. Since then they have become established, and reproduced to the point where some hunting is possible. Moose and caribou, however, are animals that prefer to remain as far away from human habitation as possible, and it is doubtful that they will ever populate the parts of the island occupied by scattered farms.

Deer, on the other hand, are quite agreeable to living in close proximity to human habitation. It is the thought

of game officials that they can perform a dual function by introducing deer. Not only will they be increasing the game supply but they will also be alleviating the fresh meat scarcity in farming communities. At the same time they will be introducing an animal that will merely occupy a place heretofore vacant, an animal that will not compete in food or territory with the moose or caribou.

John Pierce, Maine Cooperative Wildlife Research Unit leader and biologist in charge of the recent survey, recommended introduction of white-tail rather than English red deer. Red deer, said Mr. Pierce, are more apt to compete for food with the present big game than are white-tail deer. Besides, he said, large areas of northern Newfoundland are in many ways similar to the mainland of Canada and United States where deer already thrive, in many places to the point of a superabundance.

According to Mr. Pierce, the absence of deer is more of a geographic accident than a deep-seated biological reason. In the end, Newfoundland may prove even better adapted to deer than the mainland, for the climate is less extreme both in winter and summer. This peculiarity is accounted for by oceanic and continental influences.

Science News Letter, March 7, 1942

BOTANY

Pineapple Plants Treated With Calcium Carbide

PUTTING calcium carbide on pineapple plants to force them into bloom is the device used by planters of tropical Australia.

Secret of the technique is the fact that calcium carbide is the parent stuff of acetylene, which evolves as a gas when the carbide is moistened. Acetylene is one of the hydrocarbon gases that has been used to stimulate plant processes, including blossoming.

The Queensland planters, however, have found it unnecessary to go to the somewhat expensive bother of gas-treating their pineapples. They merely drop bits of calcium carbide into the heart of the leaf cluster when the plant is in bud, and the first rain, or even heavy dew, causes the evolution of the acetylene.

Care has to be exercised in the treatment, because too much carbide burns the plants, too little produces no results. But experience indicates the right amount, and brings about an increase in the pineapple crop.

Science News Letter, March 7, 1942

BOTANY

Treated Sesame Has Bigger Oil-Bearing Seeds

S ESAME, known to Occidentals mainly because of its mention as a magic password in the Arabian Nights tales, is an important food-oil plant in warmer lands. For this reason, there is possible economic importance in the experiments of Prof. D. G. Langham of the Instituto Experimental de Agricultura y Cria at El Valle, Caracas, Venezuela. Prof. Langham has succeeded in obtaining new strains of sesame with much larger oil-containing seeds by treating standard strains with colchicine, heredity-changing drug (*Science*, Feb. 20).

The new strains, which have double the chromosome number of the old, produce approximately equal numbers of seeds with comparable specimens of the ancestral varieties; but the seeds are on the average 56% larger. There are also several outstanding changes in the plant structure generally.

Science News Letter, March 7, 1942

MEDICINE

Practical Instruction Urged for First-Aiders

MAGINE a bomb explosion in which a man is burned about the face and hands, severely cut on the shoulder from flying glass, and receives a compound fracture of the leg.

The victim lies amid piles of debris in an upstairs room from which he must be carried down in the dark with shielded flashlights.

This, says the *Lancet* (Jan. 17), is the sort of problem that first-aiders should be taught to handle.

In a plea for more realistic instruction of first-aiders, a *Lancet* editorial urges teachers to give their classes plenty of such examples to work on.

The editorial notes that American first-aiders commit the same blunders as the British:

"They fail to examine patients carefully enough; they pay attention only to the worst injury; they use splints which are too short; and they incline to be too free with the tourniquet."

The editorial concludes with the warning that "any of these dark nights the skill and conscience of the first-aid lecturer may mean the difference between survival and death for somebody, and if invasion comes the efficiency of our first-aid may turn the scale."

Science News Letter, March 7, 1942

ENGINEERING

Crisis Communication

Army Would Welcome a Volunteer Force of Individuals Who Could Dispatch Messages By Signals or Pigeons

By MARJORIE VAN DE WATER

IF EMERGENCY should hit any local community, temporarily disrupting or putting excessive burdens upon telegraph, telephone, radio and other ways of getting public and personal messages from place to place, simpler methods of communication may become of great value.

With amateur radio "hams" off the air or with their activities limited, an emergency such as an earthquake, a flood, a serious fire, explosion, or air attack might bring an urgent need for older and simpler methods of sending messages.

Communication is the vital blood stream which makes all-out war possible.

The Army would welcome the voluntary services of a civilian force of communication personnel who could dispatch messages from hilltops by semaphore flag signals, who could signal rescue airplanes with the accepted panel displays stretched on the ground, who could rig up an emergency field telephone or who could accept or send notes by carrier pigeon.

The official "Basic Field Manual" used by the Army to train selectees for service in the U. S. Army Signal Corps can now be purchased for training purposes by any civilian from the Government Printing Office. Its price is only 45 cents. In case you send for one, however, do not be disappointed at a delay. It is a best seller. Ask for FM 245.

The manual contains a wealth of material for the information of any voluntary civilian message unit, all of which would conform exactly to the standard practice of the U. S. Army.

Any individual can learn the standard semaphore code signals so that in an emergency he would be able to send messages. A group trained in this wig-wag language could pick out favorable posts at which they could station themselves so as to relay the messages for considerable distances.

It is relatively easy for the ordinary person to familiarize himself with the International (dot-dash) code so that he would be able to understand buzzer signals or those transmitted by blinking lights if necessity demanded.

Much more difficult, but entirely possible for the amateur engineer or handyman who has perhaps already built his own radio receiver, is the rigging up of a battery field telephone or telegraph. While the operation of amateur radio transmitters must obviously be restricted during wartime, the construction of instruments for wire transmission of telegraph messages by International code would not be subject to the same limitations. The wire instrument is just as much fun to construct and to operate.

In case a community should be cut off by flood or some such local disaster, it would be extremely helpful if brief messages could be flashed to airplanes surveying the scene from overhead.

For this purpose, you should be familiar with the standard Army procedure for signaling airplanes with panel displays stretched out on the ground or rooftop.

Cotton Fabric Used

The panels are merely pieces of cotton fabric, ordinarily two feet, four inches wide and 12 feet long. White is used under most conditions, black for spreading on the snow or other white surface. If communication must be with airplanes flying at high altitudes, larger panels measuring six feet by 30 are used.

A regular code language for use in displaying these panels to form letters and numbers is provided in the Signal Corps Communication Manual.

If a suitable place is available where an airplane can safely swoop down close to the ground, it is possible for the plane to pick up packaged messages in flight even though a landing might be out of the question on account of rough or wet ground or for other reasons.

An open area 300 yards or more in length is needed. There must be no obstacles in the direction of the wind that would keep the plane from flying very close to the ground. Direction of the wind is very important, because the airplane must fly directly into (against) the wind.

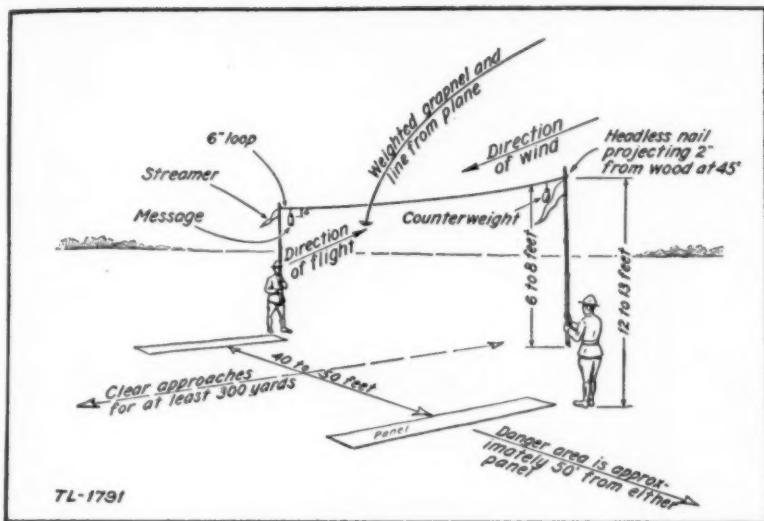
Here is all the equipment you would need to get your message aboard the plane: Two 10-penny nails. Two poles. (In place of the nails and poles, soldiers use rifles with bayonets attached.) Sixty feet of cord about 1/16 inch in diameter, preferably waxed.

A nail is driven through each pole about six inches from the top so that



MISTER CORRIGAN

Champion of champions among the wrong-way pigeons, this bird not only brings back a message but can carry one away from his home loft. This stop-motion picture shows the delicate feathering of his wing tips.

**WHEN PLANES CAN'T LAND**

Airplanes can pick up messages without landing if this equipment is used to aid them.
From the U. S. Signal Corps Communication Manual.

the nail point will protrude about two inches and point up at an angle of about 45 degrees. It is important that the nails be carefully smoothed off so that the cord cannot foul.

A six-inch loop is made in each end of the cord with a knot that will not slip. About eight inches of cord is left free between the knot and the end of the line. To one free end is tied the message in a bag and to the other a balance weight. The loops are placed over the nails and the poles held upright so that the points of the nails are directed against the wind.

The airplane, flying low between the poles and into the wind, is trailing a weighted line to which is attached four hooks. The hooks snare the cord with messages attached and they are then pulled into the airplane.

The raising and training of homing pigeons is an activity requiring much more skill than these methods of communication, but providing a great deal of fun and a really important means of getting messages out. Specially trained Army birds can make flights as long as 1,000 miles and their speed on a 400-mile trip is about 42 to 45 miles an hour. The maximum speed is 60 miles an hour. Thus they can cover distance faster than an automobile in traffic.

To raise pigeons, it is necessary to know how to give expert care to the birds, to prevent or cure illnesses, repair feathers, and to feed them properly.

In the Army, the homing pigeons are pampered pets. They live in luxurious quarters and when in the field may

occupy the latest in trailers. Everything possible is done not only to keep them physically fit, but to insure that they are happy and pleased with their surroundings and companions. To be sure, the motive behind this is to make the birds anxious to hurry back to quarters whenever they are released—perhaps long distances away.

"Pigeoneers" are selected by the Army on the basis of personality as well as skill. According to the manual on the Homing Pigeon the man must be regular, prompt, kind, able to obtain the confidence of the pigeons, patient, neat, and firm.

The birds carry messages written on tissue paper and placed in a tiny container on one leg. They can carry slightly heavier weights on their backs.

Training of homing pigeons begins while they are still fledglings on the nest. Separate birds are trained for day flying and for night flying.

First lesson is merely to recognize the rattle of dry peas in a can as a signal that food is coming up. This is later the lure that brings them home.

At four weeks they can be taught to enter the loft at the sound of the can rattle inside when they are released on the lighting board outside.

After they have learned to fly, they can be taught to fly from the hand to the lighting board and then to go into the loft as before. At first the distance is only a few feet. Gradually it is increased until the loft is just barely visible—about a mile away.

During the following week, the train-



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NO ONE yet can describe with certainty the nature of the filterable virus; but great strides have been taken in the study of this minute "link" between living and non-living matter.

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Engineering Products Division

ing is made harder. Training flights are three times a day and the distance is longer and longer until five miles is attained by the end of the week.

Later, flights are less frequent but distances are increased gradually to 75 or 100 miles and then even longer.

Pigeons trained to fly at night are never flown in the daytime, because that would spoil them for night flying.

Even after years of experience, the birds never lose their fear of flying at night. But it is especially bad in youngsters. Two-week-old birds are released for exercise late in the afternoon so that they get back to the loft at dusk, or a little later. First long flights are started before dawn. The bird learns that if he only remains in the air long enough, the dark is gone and he can find his way home. Later he can complete the flight in darkness.

Night flying pigeons are highly directional, however. A bird taught to fly from the south is not reliable when flown from other directions. No attempt is made to deviate more than 45 degrees from the training course.

Pigeons are now subject to draft as are young men. The Army takes them from their owners and breeds them. The young are trained for Army service. But when the year is up, the parent birds go back home.

Latest development of Army pigeon training unfortunately cannot be used by civilians raising the birds, for it is wrapped in deepest secrecy. It is the remarkable method originated by Major John K. Shawhan for teaching the birds to fly two ways. Although armies have used homing pigeons for centuries, never before since Noah sent the dove out to



DELIVERING MESSAGE

The new two-way pigeons will carry messages as far as from Washington, D. C., to Boston to a cage like this, deliver a message, pick up another and return. With the birds is Major John K. Shawhan, who originated the method of training these new two-way pigeons. All these pigeon pictures are official photographs of the U. S. Signal Corps.

return with the olive branch have birds been trained to carry a message from their home loft and return with a reply.

Now, pigeons can be sent to new locations to which they have not been previously trained to fly and will return

again to their base. They can even take orders to a parachute trooper dropped behind enemy lines and bring back his report without disclosing his presence to the foe.

Science News Letter, March 7, 1942

PSYCHIATRY

Military Authority Useful To "Steady" Nervous Soldier

THE MILITARY authority of Army doctors, if judiciously used, can "steady" a soldier showing signs of neurotic behavior, Capt. Robert P. Kemble, M.C., U. S. Army, told members of the American Orthopsychiatric Association meeting in Detroit.

This, however, apparently does not mean confirmation of a once-popular belief among laymen that military service should be prescribed to make a man of a timid nervous youth, for Capt. Kemble stated:

"In no way should these remarks be construed as advocating military service for psychoneurotics at any time. The

Army has at hand the primary job of winning the war, rather than the treatment of psychoneurotics."

In civilian practice, Capt. Kemble pointed out, psychiatrists try to use as little authority as possible, seeking instead to develop the patient's independence to the point where he can take responsibility and make decisions for himself.

In military practice, on the contrary, the psychiatrist is faced with the question of how much psychiatric treatment "should be allowed to creep into one's authority."

The knowledge that the performance of duties will be required has a steady-

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**LUXURIOUS QUARTERS**

Two-way pigeons of the U. S. Army have been trained to fly from mobile lofts in trailers like this that can be maneuvered in battle areas.

effect and in this way the military authority becomes effective treatment.

"The very clarity and simplicity of military regulations and the fairness with which they are applied offer some measure of security to those who need it," Capt. Kemble declared. "Each commander can be a symbol of this authority and when confronted with neurotic behavior brief, clear presentation of the requirements, penalties, and alternatives should be helpful. Special liberties or privileges would tend to delay improvement, while risking dissatisfaction among other members of the command. On the other hand, the imposition of extra hardships or punishments risks the precipitation of acute crises or justified resentment. The procedures suggested are fully compatible with the commander's duties and the limited time at his disposal."

Science News Letter, March 7, 1942

Help Delinquent Children

BRAIN WAVE studies may help delinquent children, it appears from a report by Dr. R. L. Jenkins and Dr. B. L. Pacella of studies at the New York State Training School for Boys and the New York State Psychiatric Institute.

Such studies, they found, will detect those cases in which the delinquency is

due to or aggravated by organic brain defect and for which the customary treatment for delinquency is not likely to succeed.

Most cases of delinquency, particularly of group stealing and kindred activities, do not suggest the presence of any brain defect and do not show a large number of abnormal brain wave records.

The abnormal brain wave records, indicating brain defect, appear frequently in children with assaultive tendencies resulting from emotional instability, irritability and poor self-control and whose school maladjustments are related to restlessness, distractibility, short attention span, inability to concentrate, inability to adapt to a program of high restricted activity and sedentary study.

A "defeatist attitude" is not justified merely because of an abnormal brain wave record, the psychiatrists declared. These delinquent boys are often capable of responding in some degree to treatment, but may need special and longer treatment than other delinquents.

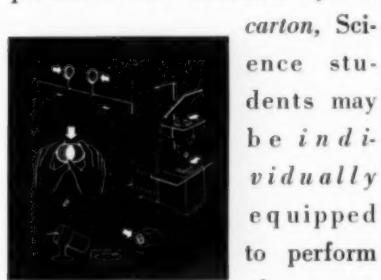
Schools should take account, the psychiatrists urge, of the "handicapped personality" as well as of handicaps in seeing, hearing and heart action. The brain wave records may become a valuable aid in recognizing many of these handicapped personalities in time.

Science News Letter, March 7, 1942

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New Machines And Gadgets

Novel Things for Better Living

Bacteriological culture tubes are now made with neat black screw caps composed of plastic, in place of the time-honored plug of cotton wool. The screw caps are said to reduce liability of mold, contamination and evaporation, to be easier to handle than cotton plugs and to save time and money.

Cracked highways are hard on tires and will be still more damaging to the semi-rubber tires we will soon be using. They can be prevented by using rock salt in the road base. This prevents freezing, which is the chief cause of the cracks. Rock salt is cheap and not subject to priorities. It has been used on a number of highways in the east, some of which have shown no frost damage for five years. More extended use would save tires and also save money in road repairs.

Wrinkle paint, that will give a pleasing wrinkle finish to metallic objects, can be obtained from paint dealers at a nominal price. The paint must be burned in, but the kitchen oven will do, if heated to 240 degrees Fahrenheit. A spray gun is preferable to a brush, and a light undercoat followed immediately by a second heavier coat gives better results than a single heavy coat. Baking can follow immediately and takes about half an hour.



These are goggles that really protect the eyes against flying missiles, hot sparks, even a light blow with a hammer. They are made of a tough transparent plastic which though clear as crystal, oddly enough is made from coal and petroleum.

Mobile power plants, mounted on trucks, railway cars or vessels, can be of great assistance when war's vicissitudes or natural disasters have interrupted the regular electrical service. Two 10,000-kilowatt plants mounted on railway cars have been ordered by

the Navy Department to be stationed one on the East Coast, the other on the West Coast, to provide emergency power wherever their projects may require. A 50,000-kilowatt floating plant is projected. This would meet the electrical needs of a city of 150,000 to 200,000 population.

Safety goggles for fighting incendiary bombs are now to be had. They protect the user both from the intense light and the intense heat of the burning magnesium. The glass transmits 20% of the "seeing" light, stops all of the ultraviolet or sunburn rays and 88% of the infra-red or heat rays.

A field glass holder that supports the glass in front of the eyes, thus leaving the hands free for other uses, has recently been patented. The device includes a headgear composed of straps that go over and around the head. The holder is hinged to this headgear so that the glasses may be raised and clamped in position in front of the eyes or allowed to hang under the chin.

Lightweight dust masks have been provided for Uncle Sam's mechanized troops. The masks weigh only one and a half ounces, yet will exclude particles as small as 1/25,000 of an inch. Five hundred of these dust particles could be stretched across one of the periods used on this page. The masks are especially intended for the troops that follow the armored divisions—soldiers who generally march or fight in a cloud of dust.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 94.

Science News Letter, March 7, 1942

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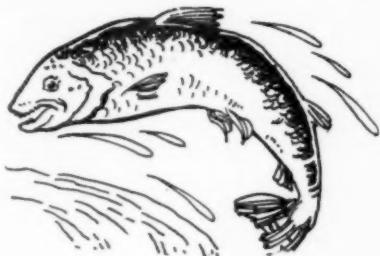
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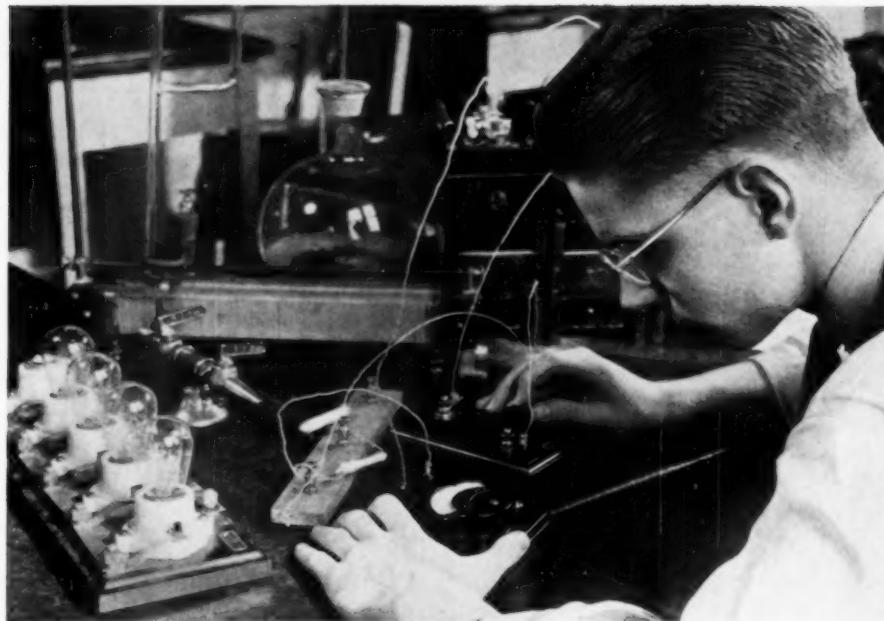


Changed Ways

QUINAULT salmon have been running up the same river in the Pacific Northwest for unknown centuries. For unknown centuries, Indians living on the bank of the river have been trapping the big fish, in highly effective weirs of their own devising. These fish-traps could easily have wiped out the run entirely, says Clifford C. Presnall of the U. S. Fish and Wildlife Service, yet they have not done so. Only since the coming of the white man has the danger to the Quinault salmon become real.

The story of the primitive state of balance between Indians and fish is a relatively simple one. Effective though the fish-trapping weirs were, they were not permitted to operate all the time. This was not because the Indians had any notion of conservation, but just because they had the normal human amount of laziness. It took a lot of work to fashion a weir out of willow twigs tied together with larch roots. The violent waters of a flood could easily tear to pieces the product of many hours of labor. So the Indians used to leave the weirs in position during the low water only. When a flood began they would take them out of the stream bed, to replace them after the water had subsided. During the flood the salmon continued their upstream migration, and enough of them reached headwaters to insure maintenance of the salmon run at high level.

When the white man came, setting up big canneries, the picture was radically altered. Before that, the only use the Indian had for salmon was to eat them himself. After he had supplied his immediate needs, and smoked enough more for use until the next season's



LEARNING CODE

Boys in the physics department of Monroe High School, Rochester, N. Y., are learning telegraphy and radio operation so as to prepare themselves to serve their country. The Signal Corps of the U. S. Army is glad to have intelligent boys train themselves in this field.

catch came in, there was no point in taking any more. But the white man was willing to pay the Indian for as many fish as he cared to bring in. Furthermore, he had things to sell; interesting new gadgets to use or wear, and even more interesting stuff to drink.

So the Indian had an incentive to leave his weirs in the water longer than he had been used to doing. Also, with materials purchased from the white man, he could make his fishing a great deal more efficient. So Indian over-fishing, together with other factors, especially stream pollution, has begun to present some worrisome problems to conservationists.

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tographic contest, science talks by members and excursions to places of scientific interest. The sponsor is Morris Allan Brinn, teacher of general science.

YOUNGSTOWN, Ohio—Members of the East Electrons of East High School are busy selecting items to exhibit at the Fifth Annual Science Fair to be held in April. Individual and group experiments and demonstrations by members on current scientific subjects are given at meetings of the club which is sponsored by Roy B. Stine, head of the science department.

BELLEFONTAINE, Ohio—Before the summer vacations start members of the General Science Club of Bellefontaine High School expect to be able to identify easily many birds and rocks. As a matter of fact the program calls for identification of 100 birds and 100 different rocks and minerals. A third project upon which the club is now working is to demonstrate the value to the scientist of the camera and photography. All three projects are, in our opinion, very much worth while.

Clubs are invited to become affiliated with SCA for a nominal \$2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.



SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

FLEETWOOD, Pa.—Members of the Fleetwood High School Science Club, are learning, at the local Weather Observatory, how weather forecasts are made. Members also are studying aviation at the Transport Field in Reading. These activities fit right in to the National Defense Program and should be helpful in the immediate future.

NEWARK, N. J.—Members of the Explorers Club at Barringer High School Annex are building model airplanes and making models to demonstrate scientific principles. Other activities include chemical demonstrations, a photo-

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•First Glances at New Books

EDUCATION

THE AMERICAN CITIZENS HANDBOOK (2d ed.)—Joy Elmer Morgan, ed.—*National Education Assn.*, 415 p., illus., \$1. Text of historic documents and selections of patriotic poetry and prose incorporating democratic ideals and published under the Hugh Birch-Horace Mann Fund for the Committee on New Voter Preparation and Recognition. In the book it is urged that "Citizenship Recognition Day", set aside by Congress to be observed on the third Sunday of May each year, be considered a great national event ranking with the Fourth of July. For, annually, some 2,000,000 young Americans reach the age of 21 and some 200,000 newly naturalized citizens are admitted to active participation in government as voters. See S. N. L. June 14, 1941.

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GENERAL SCIENCE—HISTORY

A SHORT HISTORY OF SCIENCE TO THE NINETEENTH CENTURY—Charles Singer—*Oxford Univ. Press*, 399 p., \$3.75. A great historian of science tells, in a wordage possible of reading, the background of our modern scientific world, up to the beginning of the present century.

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MEDICINE

FOUR TREATISES OF THEOPHRASTUS VON HOHENHEIM CALLED PARACELSUS—C. Lilian Temkin, George Rosen, Gregory Zilboorg and Henry E. Sigerist, trans.; Henry E. Sigerist, ed.—*Johns Hopkins Press*, 256 p., \$3. Here is an important addition to medical literature, which nevertheless is interesting reading for laymen or physicians. Like his contemporaries in Renaissance literature, Paracelsus was inclined to go to first sources, i.e., life itself, for his information, rather than rely on the writings and forms of the ancients. For this he was roundly damned, of course, but emerged in history as an honest physician. This book will tell you why.

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CHEMISTRY

MICROMETHODS OF QUANTITATIVE ORGANIC ANALYSIS (2d ed.)—Joseph B. Niederl—*Wiley*, 347 p., \$3.50. New edition of a laboratory manual in an increasingly important branch of chemistry. The literature has been brought up to 1941. In the Appendix are chapters pertaining to qualitative organic analy-

sis, to the teaching of quantitative organic elementary micromethods and to the installation of a laboratory for quantitative organic microanalysis.

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ENGINEERING

TECHNICAL DRAWING (2d ed.)—Frederick E. Giesecke, Alva Mitchell and Henry Cecil Spencer—*Macmillan*, 687 p., illus., \$4. Enlarged and revised edition of an excellent text, likely to be widely used in these days when technical draftsmen are badly needed. It is notable that leading manufacturing concerns have co-operated with the authors in supplying some of the drawings for use as practical illustrations and problems.

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ECONOMICS

CURTAILMENT OF NON-DEFENSE EXPENDITURES—Henry P. Seidemann—*Brookings Institution*, 54 p., 25c.

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EDUCATION—RADIO

A COURSE OF STUDY IN RADIO APPRECIATION—Alice P. Sterner—*Educational and Recreation Guides*, 36 p., illus., \$1.

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GENERAL SCIENCE

PHYSICAL SCIENCE—Charles H. Nettels, Paul F. Devine, Walter L. Nourse and M. E. Herriott—*Heath*, 464 p., illus., \$2.24. One of those streamlined texts for high school use that you are tempted to sit down and read to get a background of science.

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PSYCHOLOGY

STUDIES ON THE PROBLEM DRIVER—Lowell S. Selling and Alan Carty—*City Clerk, City Hall, Detroit, Mich.*, 64 p., \$1. A collection of reports based on study of accident-causing or law-violating drivers in the Recorder's Court at Detroit.

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POLITICAL SCIENCE

A TREASURY OF DEMOCRACY—Norman Cousins, ed.—*Coward-McCann*, 306 p., \$3. A collection of the sayings and writings of many men and women concerning those principles of government by and for the people, for which we fight—utterances wise or witty, poetically beautiful or bluntly direct and extending through time and space from Confucius in China to Wendell Willkie in New York.

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MEDICINE

THE DOCTORS MAYO—Helen Clap-sattle—*Univ. of Minnesota Press*, 712 p., \$3.75. An authorized history of The Old Doctor, William Worrall Mayo, his two sons, Drs. Will and Charlie, and the famous clinic and foundation they founded at Rochester, Minnesota. The book is lengthy, but enlivened with many anecdotes, and for the student of medical history this authorized version of events and developments at the world-renowned medical center will prove useful for distinguishing fact from the legends which are likely to develop around such an important institution.

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ARCHAEOLOGY

WHEN EGYPT RULED THE EAST—George Steindorff and Keith C. Seele—*Univ. of Chicago*, 284 p., illus., \$4. Life in the fertile Nile valley thirty-five hundred years ago is vividly described here by two leading Egyptologists. Telescoping the earlier periods, emphasis is placed on the glories of the Eighteenth, Nineteenth and Twentieth dynasties. It is interesting reading, and the illustrations are splendid.

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ANTHROPOLOGY

MAYA INDIANS OF YUCATAN—Morris Steggerda—*Carnegie Inst. of Washington*, 280 p., 35 figures, 32 plates, \$1.50 paper, \$2 cloth. A careful and well-annotated study of Maya Indians of today by a social anthropologist of the Carnegie Institution. The glory of the Maya civilization was declining even before the Spaniards came, and the old cities are overgrown ruins, but the Indian today lives, for the most part, just as his ancestors did centuries ago.

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PALEOBOTANY

A MIDDLE EOCENE FLORA FROM THE CENTRAL SIERRA NEVADA—Harry D. MacGinitie—*Carnegie Institution of Washington*, 178 p., 47 pl., \$2 paper; \$2.50 cloth. A region now occupied by cool-climate forests was, during the Mid-Eocene, the home of a very rich flora ordinarily thought of as belonging to moist, warm-temperate regions like the present Southeast: magnolia, laurel, sweetgum, blackgum, as well as more strictly temperate-zone genera like oak, chestnut, sycamore and witch-hazel.

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